

Hazardous Waste Operations and
Emergency Response
(Hazwoper)

***Functional Based Electives –
Drum Scenarios***

Notes for the Instructor

These scenarios are based on actual incidents that involved USCG units. We changed some of the details but the basic scenarios are nearly identical to the actual incidents. We added some details to illustrate some of the hazards Marine Safety personnel will likely face in such incidents.

The PowerPoint slides that go with these scenarios contain instructions for the instructor. They are an abbreviated version of the information in this document. We encourage you to read this document and become familiar with the scenarios before using them in a class. We suggest providing class participants with a copy of the scenario and instructions from this Instructor Guide when you show the associated slide.

We encourage instructors to make these scenarios applicable to their OCMI Zones. To that end, we have left the names of the ports and the vessels blank.

Documents such as DCMs and MSDSs are as close as possible to the actual documents used in the incidents these scenarios are based on. As they say on TV, we changed the names to protect the innocent.

We have included a variety of scenarios in this Instructor Guide to give you several options for exercises. These are all designed as stand-alone exercises.

We encourage you to provide feedback to improve these scenarios. If you have suggestions for new scenarios please feel free to submit them.

Please make every effort to keep the focus of discussions on health and safety. Class participants will often want to expound on other subjects or bring up points that are not closely related to this subject matter.

Instructions for Activities.

- Single Person* Assign each class participant the tasks listed on the exercise scenario. Instruct them to read the scenario and develop a written list of the information the scenario requests. After an appropriate period of time, ask for a volunteer to read their list. When he/she is done, ask who has any other items to add. Facilitate a discussion of the different lists and/or different priorities. Maintain the focus of all discussions on health and safety issues.
- Group* Break the class into an appropriate number of groups (we suggest at least three people per group). Assign each group the tasks listed on the exercise scenario. Instruct them to read the scenario and develop a written list of the information the scenario requests. After an appropriate period of time, ask for a group to read their list. When they are done, ask who has any other items to add. Facilitate a discussion of the different lists and/or different priorities. Maintain the focus of all discussions on health and safety issues.
- Options* Have the participants write their lists on a white board or on flip chart paper to make it easier for the other groups to see during their presentations.
- Impose a time limit on each activity. This will add stress to the activity and cause the participants to focus more intently on the task at hand.
- Add an element of competition to the activity. If you impose a time limit you can also give an award or prize to the group or person who compiles the biggest list.

Unknown Drum Exercise Scenario #1 Guide

Scenario While conducting a routine inspection at a local marine terminal with another CG member, you notice a 55 gallon metal drum on its side. There appears to be some liquid spilling from it, but you do not see any markings on the drum initially. You are in Southern California in July where there is no chance of it raining, and the rest of the ground in that area is dry. When you come within 10 feet of the drum, you see that there are some numbers written on it "1648" with a metal marker. There isn't any odor coming from the material that you can detect. The terminal has had problems in the past with noncompliance, both with CG and EPA regulations.

Tasks Identify the product in the drum.
List the hazards to USCG personnel health and safety.
Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.
Rank order these hazards from highest to lowest.



<i>Instructions</i>	<p>Provide the training participants with the scenario using the handout or the PowerPoint slides.</p> <p>Discuss the scenario with them and ensure they have the information necessary to answer the questions.</p> <p>Provide other information if they request it.</p>
<i>Recognize</i>	<p><i>Identify the product in the drum.</i></p>
<i>Suggestions</i>	<p>The “1648” is the DOT ID number (commonly called the UN/NA number) for acetonitrile.</p> <p>The number may not be a DOT ID number and the product may be another substance. In this case, you have no other information to confirm or deny this.</p>
<i>Evaluate</i>	<p><i>List the hazards to USCG personnel health and safety. Rank order these hazards from highest to lowest.</i></p>
<i>Suggestions</i>	<p>The DOT ERG (and other reference books) say the primary hazard for acetonitrile is flammability. This material is also toxic.</p> <p>Pertinent properties:</p> <ul style="list-style-type: none">FlashPoint (unspc): 42° FLower Exp Limit: 4.4%Upper Exp Limit: 16%Vapor Pressure: 73 mm Hg at 68° F <p>In July in Southern California you are likely to have weather conditions that would allow this material to easily catch fire. The air temperature is likely to be twice the flash point. The vapor pressure is rather high (and will be higher yet at temperatures above 68° F) so this material will evaporate quickly.</p> <p>A drum on its side is a warning. It may indicate the presence of other hazards related to whatever put the drum on its side to begin with. Responders should attempt to find out what made the drum end up like this and take actions accordingly. (Note: This FBE includes no information about this. Feel free to add such information to the scenario if you desire.)</p>

- Control** ***Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.***
- Suggestions** Approach the scene from upwind and advise other responders to do the same (give them specific directions).
- Follow DOT ERG recommendations for isolation and protective action distances. (Option: Provide a map of an appropriate facility in your AOR and have the class participants draw a diagram of how and where they would isolate the area.)
- Suggestion** Include a facilitated discussion of where responders can get more information about the material without going on scene. Provide an applicable MSDS.

Unknown Drum Exercise #2 Scenario Guide

Situation While conducting an unannounced inspection at a local marine terminal with another CG member, you notice a 55 gallon metal drum on its side in their hazardous waste yard. There appears to be some white powder spilling from it, but you do not see any markings on the drum except that it appears to be a Mobil Oil drum. This spot check of the shipyard was instigated by a whistleblower at the terminal who reported that there had been some “shaky” business going on recently with shipping “strange and unusual” materials to China.

Tasks What hazards may be present in this incident? What reference source(s) should you use to identify them?

Rank order these hazards from highest to lowest. Identify any immediate threats to life and health.

Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.



<i>Instructions</i>	<p>Provide the training participants with the scenario using the handout or the PowerPoint slides.</p> <p>Discuss the scenario with them and ensure they have the information necessary to answer the questions.</p> <p>Provide other information if they request it.</p>
<i>Recognize</i>	<p><i>What hazards may be present in this incident? What reference source(s) should you use to identify them?</i></p>
<i>Suggestions</i>	<p>The scenario doesn't provide enough information to positively identify the product in the drum.</p> <p>The fact that the material spilled is a dry powder would rule out a number of common substances (e.g. flammable liquids).</p> <p>A dry powder leaking from a drum could be anything but some common suspects could be corrosives (e.g. sodium hydroxide), pesticides or fertilizers.</p> <p>There should be some paperwork at the terminal that would tell what's in the drum. Responders can contact the terminal, the shipper, Mobil or CHEMTREC to get more information.</p> <p>An MSDS may or may not be available. Ask anyway.</p>
<i>Evaluate</i>	<p><i>Rank order these hazards from highest to lowest. Identify any immediate threats to life and health.</i></p>
<i>Suggestions</i>	<p>There isn't enough information in this scenario to make this determination. Feel free to add applicable information from common incidents in your AOR to this scenario to provide enough information to identify the product or its hazard class.</p>
<i>Control</i>	<p><i>Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel</i></p>
<i>Suggestions</i>	<p>Follow DOT ERG recommendations for isolation and protective action distances. (Option: Provide a map of an appropriate facility in your AOR and have the class participants draw a diagram of how and where they would isolate the area.) Use Guide 111.</p>

Unknown Drum Exercise #3 Scenario Guide

Situation While conducting a routine inspection at a local marine terminal with a CG member in training, you notice a 55 gallon metal drum with what appears to be an unknown material leaking from the top of the drum to the ground around it. You do not see any markings on the drum initially (photo 1), but then, upon further investigation see some (photo 2). The terminal has not had any USCG violations in the past 3 years and is active in the Port's spill response planning and operations.

Tasks Identify the product in the drum.

List the possible hazards to health and safety. Describe the information you would like to have to confirm these hazards.

Rank order these hazards from highest to lowest. Identify any potential immediate threats to life and health.

Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.

Unknown Drum Exercise #3 Scenario Photo #1



Unknown Drum Exercise #3 Scenario Photo #1



<i>Instructions</i>	<p>Provide the training participants with the scenario using the handout or the PowerPoint slides.</p> <p>Discuss the scenario with them and ensure they have the information necessary to answer the questions.</p> <p>Provide other information if they request it.</p>
<i>Recognize</i>	<p><i>Identify the product in the drum.</i></p>
<i>Suggestions</i>	<p>The label indicates the drum contains diesel fuel. Diesel fuel is commonly found in drums like this. Accept the label at face value until you find information to the contrary. (One note of caution: the label says the rating for health hazards is “3”. This is not accurate for diesel fuel and may reduce the credibility of the information on the drum.)</p>
<i>Evaluate</i>	<p><i>List the possible hazards to health and safety. Describe the information you would like to have to confirm these hazards. Rank order these hazards from highest to lowest. Identify any potential immediate threats to life and health.</i></p>
<i>Suggestions</i>	<p>According to the DOT ERG, the highest hazard is from flammability. Benzene and H2S exposure is also a concern.</p> <p>Responders should ask for further information from the terminal. The shipper, manufacturer and/or CHEMTREC should be able to provide more information.</p>
<i>Control</i>	<p><i>Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.</i></p>
<i>Suggestions</i>	<p>Approach the scene from upwind and advise other responders to do the same (give them specific directions).</p> <p>Follow DOT ERG recommendations for isolation and protective action distances. (Option: Provide a map of an appropriate facility in your AOR and have the class participants draw a diagram of how and where they would isolate the area.)</p>

Unknown Powder - Storage Locker Scenario Guide

Situation While walking to the galley on your base, you see that there is a spill of some white powder in front of the corrosive locker. The base is located near a major waterway. The wind is gusting up to 20 knots.

Tasks Identify the product involved.

List the hazards to your health and safety. Describe the clues that lead you to discover these hazards.

Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.



<i>Instructions</i>	<p>Provide the training participants with the scenario using the handout or the PowerPoint slides.</p> <p>Discuss the scenario with them and ensure they have the information necessary to answer the questions.</p> <p>Provide other information if they request it.</p>
<i>Recognize</i>	<i>Identify the product involved.</i>
<i>Suggestions</i>	<p>The markings on the locker don't provide enough information to positively identify this product.</p> <p>Many corrosives are dry powders. Others (e.g. battery acid) may become a dry powder when the water in them evaporates. The dry powder spill is consistent with the placard on the locker.</p>
<i>Evaluate</i>	<i>List the hazards to your health and safety. Describe the clues that lead you to discover these hazards.</i>
<i>Suggestions</i>	<p>The primary threat is from skin contact. Treat this material as a rattlesnake. It will only hurt you if you mess with it. If you get this material on your skin, the moisture on your skin will activate it and start to destroy the body tissues it touches.</p> <p>Someone at the base may have more information about what is in the locker. Participants should ask.</p>
<i>Control</i>	<i>Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.</i>
<i>Suggestions</i>	<p>Follow the recommendations in the DOT ERG for corrosive materials. Since you can't identify the actual commodity with the information provided in this scenario, participants should use the Guide recommended for a corrosive placard. (See the white pages of the DOT ERG.)</p>

Unknown Drum on the Water Scenario Guide

Situation While walking on a USCG unit, you see that there is a drum floating free in the water. The unit is located on a major waterway with large shipments of materials coming in from overseas daily. When you look at the drum from another angle, you see some markings.

Tasks Identify the product involved.
List the hazards to your health and safety. Describe the clues that lead you to discover these hazards.
Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.



Unknown Drum on the Water Scenario Guide Photo 3



<i>Instructions</i>	<p>Provide the training participants with the scenario using the handout or the PowerPoint slides.</p> <p>Discuss the scenario with them and ensure they have the information necessary to answer the questions.</p> <p>Provide other information if they request it.</p>
<i>Recognize</i>	<p><i>Identify the product involved.</i></p>
<i>Suggestions</i>	<p>The markings on the first two photos don't provide enough information to positively identify this product. The Flammable placard is consistent with the container type. They are often shipped or stored in carbon steel 55 gallon drums.</p> <p>Photo 3 provides more information. It has a 4 digit number that is most likely a DOT ID number. This number corresponds to gasoline (and related products) in the DOT ERG.</p>
<i>Evaluate</i>	<p><i>List the hazards to your health and safety. Describe the clues that lead you to discover these hazards.</i></p>
<i>Suggestions</i>	<p>The primary threat is from flammability. There is little possibility of the material burning if it's on the water. The product remaining in the drum is a different story. If you pull this drum from the water and some of the product spills on the ground or if the vapor space in the drum comes into contact with a source of ignition it may burn.</p>
<i>Control</i>	<p><i>Describe actions you can recommend to USCG units in the area and local terminal personnel to protect themselves from the most immediate hazards. Describe any restrictions or boundaries you would want to impose for local personnel.</i></p>
<i>Suggestions</i>	<p>Follow the recommendations in the DOT ERG for gasoline. Restrict access to the scene. Eliminate any sources of ignition.</p>